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A COLLECTING TRIP AT CINCHONA

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The Tropical Station of the New York Botanical Garden at Cinchona, Jamaica, is located in a region which is not strictly tropical, owing to its being at an altitude of 5,000 feet. Far from being a fact to be deplored, this circumstance redounds, in at least two ways, to the advantage of the visiting botanist. After spending six months here I can say that I have not been ill a single day, nor have I experienced the feeling of lassitude proverbial to the tropics. The other advantage is that from here there is readily accessible a great number of regions which are strikingly diverse in flora, owing to differences in altitude, rainfall and topography.

A spot which I visited recently proved to be of more than common interest, and I feel impelled to give an account of it in order that those who come here in the future may not miss going there. Leaving Cinchona and crossing the main ridge of the Blue Mountains at Morce's Gap, a ride of some three hours in a northerly direction brings one to Vinegar Hill, a locality at an elevation of about 3,900 feet, from which a commanding view may be had of the coast and sea to the north, and of the billowy expanse of hills to the east and west. To the southwest of Vinegar Hill stands John Crow Peak (6,000 feet), the most westerly elevation of the Blue Mountain Range. Between it and Vinegar Hill lies a large valley drained by the Mabess River, better known as the west branch of the Spanish River, which debouches near Orange Bay. Throughout the upper portion of this valley there is an unbroken stretch of virgin forest. In such a region one might search in vain for any of those introduced plants which

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play so important a part in making up the aspect of Jamaican vegetation elsewhere in the island — the cocoanut palm, the mango, the banana, the bamboo, etc. Indeed, in the absence of these plants the landscape is comparatively tame and monotonous.

The number of white men who have traversed this valley may be counted on one's fingers, and the only path in it is the ill-defined trail by which we will now make our way down to the river. The descent, at first steep, soon becomes precipitous, and now walking, now sliding, clutching blindly for support at the spiny trunks of tree-ferns, we soon reach the river. Standing at the edge of the stream we find ourselves amid surroundings of indescribable beauty. The "river" is not large, but is studded with innumerable boulders, by which it is broken into a continuous series of waterfalls and pools. Above it a closed arch is formed by the limbs of the trees, festooned with golden-brown moss or the tangles of lianes, and in the quiet pools are reflected the giant flowers of *Datura Tatula.*

The forest trees are a marked contrast to the stunted forms which cover the higher slopes of the Blue Mountains; here *Symphonia globulifera* (the hog plum) reaches a height of 100 feet, and *Calophyllum Calaba* (the Santa Maria tree) spreads its canopy of large glossy leaves to an equal height. Down at the coast the temperature is higher than here, and further up the valley the precipitation is greater, but at just this elevation there is the maximum combined effect of these two most potent forces in determining the wealth and luxuriance of vegetation. The tropical aspect of the forest is heightened by the presence of occasional individuals of the long-thatch palm (*Geonoma Swartzii*), by the banana-like *Heliconia Bihai*, as well as by species of *Canna* and *Philodendron* and the numerous shrubby and arborescent Melastomaceae and Rubiaceae, which make up the undergrowth. The epiphytic vegetation is exceedingly rich, having a groundwork of various mosses and being made up of the less xerophilous types of ferns, orchids, Piperaceae and Gesneraceae. The dense foliage of the tree-crowns renders the Bromeliaceae much less common than in the open canopy of the forest on the higher

slopes and in the xerophilous leguminous trees in the dry regions along the south coast of Jamaica. The tender *Pilea radicans* covers the limbs of the shrubs to a height of 20 feet. *Trichomanes pyxidiferum* and *T. muscoides* clothe the lower portions of many trunks and *Polypodium phyllitidis* and *P. serpens* climb over the higher parts.

The terrestrial herbaceous vegetation is extremely rich in spite of the density of the shade. It is made up chiefly of ferns, yet one will not fail to find many species of *Pilea* and *Peperomia* and several orchids; among the last, two forms with leaves possessing velvet surfaces, a characteristic developed only in the foliage of the most moist regions of the globe. Another feature which marks regions of high humidity is the occurrence of epiphyllous growth, and here it could not fail to arrest the attention of the most casual observer. Scarcely a leaf of the undergrowth is without a colony of hepatics and some large fronds of *Danaea* and *Acrostichum* are so completely covered as to leave no room for the lodging of another gemma. Among the interesting ferns which may be gathered here are *Vittaria lineata*, *V. remota*, *Aspidium Fadyenii*, *Danaea jamaicensis*, *Davallia cicutarioides*, *Gymnopteris aliena* and *Rhipidopteris peltata*. The last-named of these resembles *Lycopodium complanatum* more closely than it does any other fern. Many boulders in the river are covered by unbroken masses of it, with here and there a fertile frond — simple, reniform, and on its dorsal surface completely covered by the black sporangia. Hanging from the trees, and rather rare, is the long flaccid *Lycopodium taxifolium*, and the still more rare *Psilotum complanatum* has been found near by. Among the epiphytic orchids may be found *Liparis elata* — which grows as often upon the ground — *Masdevallia fenestrata*, *Epidendrum fragrans* — not common in this part of Jamaica — *Epidendrum bletioides*, *Comparettia falcata* and the tiny *Pleurothallis tribuloides*. The commoner *Epidendrum polybulbon* climbs over the limbs of trees in company with *Peperomia cordifolia*, the older leaves of which have a thick mass of water-storing tissue above the chlorenchyma.

Time does not suffice to make a very thorough search of the locality — the ascent must be begun in order to reach home by

night-fall. While toiling upward one has more time to examine the vegetation of the valley slopes. A striking shrub is *Cephaëlis punicea*, a Rubiaceous plant with large showy red bracts and extremely thin leaves, which are so stiffened by an epidermis which forms nearly half the thickness of the leaf that on being struck with the finger they emit a metallic sound like that from a piece of tin. Other noticeable shrubs are *Hoffmannia pedunculata*, the trailing *Schradera cephalotes* and *Clidemia plumosa*, with large densely hairy leaves. The root-parasite *Scybalium jamaicense* is fairly common along the trail, pushing its stout club-shaped inflorescences above ground, its dark rich-red color being in striking contrast to all the other tones of the surroundings. Careful search will discover scattered colonies of *Burmannia*, a saprophytic plant of the same pure white as *Monotropa* but much more slender. The rare *Apteria*, of similar habit, has also been found here. *Marattia alata*, *Lygodium volubile*, *Gleichenia furcata*, *Cyathea arborea* as well as species of *Botrychium*, *Davallia*, *Danaea*, *Trichomanes*, *Hymenophyllum*, *Elaphoglossum* and *Lomaria* offer a wide range of examples of ferns of interest because of their morphological importance. Among the trees may be seen many species characteristic of higher altitudes, as the coniferous *Podocarpus Urbanii*, *Vaccinium meridionale*, *Alchornea latifolia*, *Guarea trichilioides* and *Laplacea Haematoxylon*, a member of the tea family with splendid white, rose-like flowers.

As we near the end of the ascent our minds begin to wander from the plant life to an estimation of the remaining distance, and at length it is with pleasure that we reach the road and the waiting ponies. There are a score of just such valleys as this between Vinegar Hill and Cuna Cuna Pass, but they are very inaccessible both from above and below. The strongly endemic character of the Jamaican flora and the very limited distribution of many species would indicate that the first botanist who has the privilege of visiting these places will undoubtedly find awaiting him many forms which are new to science.

CINCHONA, JAMAICA.